DeTMan: A Decision Tree Management Tool
for the Web and PDA Environments

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Abstract. Illness management protocols, often represented as decision trees, are used in many areas of medicine. Some clinical departments maintain numerous, often quite complex protocols. Protocol access in acute care situations can be challenging, especially when available only in hardcopy format. Access via the web and especially via personal digital assistants would be more helpful. In the absence of the prior availability of a general purpose web/PDA decision tree editor/ navigator, we are developing such a tool.

Background. The complexity of modern medicine and increasing pressures for standardization and patient safety improvements are driving many clinical departments to develop protocols for diagnosing and treating a wide range of acute and chronic illnesses. Benefits in many areas, such as trauma, have been demonstrated.[1] Such protocols often are represented as decision trees, often are developed in desktop computing environments using common tools such as Microsoft Visio or Adobe PageMaker, and often are made available to the intended user community in hardcopy format, which can be challenging to maintain. Furthermore, access to these protocols, especially in acute care situations such as traumas, can be challenging. Such protocols would be more helpful if conveniently available for web-based review via both desktops and personal digital assistants (PDAs).

The MUSC Department of Surgery has a large number of complex trauma management protocols drawn in Microsoft Visio and distributed in hardcopy format in a large binder. So that these protocols would be more conveniently and effectively available, we searched for a software package that could serve as a general purpose decision tree editor in a desktop computing environment and a decision tree navigator in both web and PDA environments. Our searches were unfruitful, so we undertook the development of such a package. So that protocols can easily be viewed by a browser on any platform, we chose to present them via simple HTML (instead of, for example, Adobe Portable Document Format, convenient for desktops but not PDAs, or as custom PDA application which would have introduced application distribution complexities).

Materials and Methods. Using Macromedia Cold-Fusion, we are developing a web-based application to serve as an enterprise-ready general purpose decision tree editor/navigator. Tree elements (nodes, etc.) are stored in a Microsoft SQL Server database. MUSC has begun deploying campus-wide wireless LAN access, and in the initial, platform-independent version of our application, the database is accessed dynamically. However, a planned enhancement is a rendering of the database as a static, periodically downloadable set of pages intended for use by off-line PDA browsers.

Results. We are presently loading a sampling of the MUSC trauma management protocols into the database via the editor application. We plan to review the editor and navigator user interfaces with MUSC Department of Surgery faculty and residents to ensure usability in both the web and PDA environments. We will then use the editor to load into the database the remaining trauma management protocols before making the application generally available to the Department of Surgery. After further assessments of the utility of the package, we will consider making it available to other departments at our institution and elsewhere.

We will provide updated results at the AMIA 2003 Annual Symposium.

Discussion. Protocol-based illness management is increasing and is facilitated by convenient availability of such protocols. We believe protocol delivery via both the web and PDAs would be of benefit in this regard, but no software package for accomplishing such delivery presently exists. We are developing such a package and are investigating whether it will indeed be helpful in protocol-based illness management. We intend to report results at AMIA 2003.

References

1. Simons R, Eliopoulos V, Laflamme D, Brown DR. Impact on process of trauma care delivery 1 year after the introduction of a trauma program in a provincial trauma center. *J Trauma Injury Infection Critical Care* 46(5):811-6, May 1999.